CHAPTER III

REVIEW OF LITERATURE

3.1 Information Technology In Business Process Reengineering - Marta Fossas Olalla

IAER: August 2000, Vol. 6, No. 3

Today’s environment is characterised by increasing levels of competition. Enterprises wanting to increase their market share or obtain profits must adapt changes in the environment. Consequently, many changes in business methods are beginning to appear. One of them is business process reengineering (BPR), defined as the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance. Among the potential enablers of MPR is information technology (IT). IT makes it possible to obtain improvements in BPR, though not just by itself. This paper will demonstrate the importance of IT in one of the most importance of IT in one of the most prominent methodologies. Enterprises can make their tasks easier, redesign their organization, change the way they work, and achieve spectacular improvement using, among other enablers, IT. (JEL M12) Universidad Complutense de Madrid-Spain. This paper was presented at the Forty-Seventh International Atlantic Economic Conference in Vienna, Austria, March 16-23, 1999.

3.2 Modelling And Analysis Of Business Process Reengineering - A. GUNASEKARAN and B. KOBU
Business process design and business process reengineering (BPR) depend crucially on linking production procedures and organizational services to business goals and objectives. There is currently very little formula support for this kind of reasoning as analytical tasks are usually carried out informally and individual design decisions are hard to relate to business objectives. If BPR is carried out without understanding the way it is done, then the most likely outcome would be continuing less-than-satisfactory current practice and automating outdated processes. This kind of practice misses opportunities for innovation and rationalization. The modelling and analysis of business processes along with business strategies and organizational structures are essential to study the implications of BPR. In this paper, an attempt has been made to study the modelling, analysis and tools/techniques used for modelling of BPR with the help of a survey on the recently (1993±2000) employed methods and tools used for BPR modelling and analysis. A framework for modelling and analysis, and guidelines for the selection of tools/techniques of business process reengineering are presented.

3.3 The State of Business Process Reengineering: A Search for Success Factors - David Paper & Ruey-Dang Chang

BISE Department, Utah State University, Logan, USA, Department of Business Management,
National Sun Yat-Sen University, Taiwan, Republic of China
In this article, the authors explore the organizational process change dynamic through a theoretical lens of business process reengineering (BPR) models. They review relevant literature related to such models to devise a synthesized model of BPR. The synthesized model facilitates the identification of success factors for BPR. Results from in-depth case-study research add explanatory power to our model. They hope that their model and subsequent success factors offer insights to help organizations effectively manage change and transformation.

3.4 A Model Management Approach to Business Process Reengineering - Levent V. Orman

Total Quality Management, Vol. 16, No. 1, 121–133, January 2005

A prescriptive and analytical approach is taken to business process reengineering (BPR). The objectives are to provide precise guidelines for process redesign to take full advantage of the efficiencies created by information technologies, and to develop techniques to evaluate alternative structures. A decision-making paradigm of organizations is adopted, and organizational processes are viewed as collections of decision models. Such a simplified analytical model provides an effective methodology to describe and quantify the impact of information technology on organizational structures and processes. The model explains and quantifies a variety of organizational issues such as: the significance of hierarchical structures in organizations, the need for business process reengineering after the introduction of information technology, and the exact conditions under which information technology may (and should) lead to more or less centralized structures. Reoptimization of business processes after the introduction of information technology is formulated as a dynamic programming problem.


Companies are leveraging existing resources and the internet to come up with new or modified business models to respond to the demands of ebusiness. Companies in the food processing industry are also waking to the reality that e-business technology can make a big difference to the bottom line. This paper presents the result of an action research project which applied a new approach labelled as the Delta Model developed by Hax and Wilde (2001) of Sloan School of Management to strategy development for brick-n-mortar companies launching e-business initiatives. The case company is called Wheystone Food Ingredients (WFI), located in UK. The company is firmly embedded in the agriproduct industry and operates in the ‘egg by-product’ subsector. This paper is based upon action research supplemented by a programme of in-depth interviews with managers at WFI for various aspects of their supply chain and e-business initiatives. On the basis of these interviews and the companies also made a range of documents available throughout. These included internal memos, strategy plans, operational control documents and minutes of meetings. The Delta Model and Davenport’s methodology of business process reengineering were adopted to structure this analysis. Used in conjunction, they helped to develop a vision, analyse the business processes, identify critical business processes, benchmark the critical processes, and then develop the information technology infrastructure. The infrastructure thus supported the critical business processes and leveraged the ebusiness supply chain to enable the company to gain competitive edge.
3.6 Assessing The Impact Of Information Technology On Firm Performance Considering The Role Of Intervening Variables: Organizational Infrastructures And Business Processes Reengineering Albadviy, A. Keramatiz and J. Razmiz


The relationship between the use of information technology (IT) and firm performance has been widely researched over recent years. However, there has been no well-founded empirical research on the role of intervening variables on such a relationship. The current paper aims to present an instrument to be used in such research and to study the role of two intervening variables including organizational infrastructures and business processes reengineering in such a relationship. Data from 200 car part manufacturers were gathered in a field survey. The empirical work indicated that constructed measures demonstrate the key psychometric properties including reliability and validity. The findings also demonstrate moderating effects of organizational infrastructures and mediating role of business processes reengineering on the relationship between the use of information technology and firm performance.

3.7 A Systematic Approach to Optimizing Business Processes beyond ISO 9000: A Taiwanese Case Study - In-San Hwang, Chung-Li Chou

*International Journal of Management Vol. 21 No. 3 September 2004 349*

Few researchers have systematically studied both business process optimization management and ISO 9000, especially post-ISO 9000 Implementation, although many researchers have examined business process reengineering (BPR) or/and total quality management (TQM). However, in practice, numerous medium and small sized organizations implement ISO 9000 but do not appreciate TQM and BPR. This study uses grounded case field study to explore this area, and offers a demonstration
for managing and optimizing business process beyond ISO 9000 to foster a distinctive competitive edge. The major achievements of this investigation include: (1) gaining insights from critical perspectives and the dynamic nature of processes to develop a systematic and fact-based approach, namely the ISO approach, for identifying, studying and optimizing processes, and particularly for establishing complete quality and continuous process improvement systems: (2) achieving economic and effective management by assessing and selecting the competitive processes as well as optimizing their quality and capabilities to enhance organizational competitiveness.

3.8 A Paradigm For ERP And BPR Integration - J. K. C. Ng, W. H. Ip and T. C. Lee


In order to sustain a competitive edge in this global manufacturing era, enterprises need to adopt appropriate improvement schemes. Two widely-used tools have been Enterprise Resource Planning (ERP) and Business Process Reengineering (BPR). ERP is identified as the most applicable information system for the modern manufacturing industry. In addition, many BPR practitioners have identified the use of information technology (IT) as a critical factor for the success of BPR. Nevertheless, research into IT for BPR and hence ERP is limited. One of the major reasons why the ERP system has not been implemented successfully is the inappropriate use of design and implementation methodology employing the modern BPR concept. Accordingly, in this paper, the authors propose a conceptual model called the Hierarchical Design Pyramid (HDP), to implement ERP under an enterprise re-engineering (BPR) context, using an integrated structured and object-oriented tool to design a novel manufacturing system in a total quality environment. The proposed model aims to provide a basis for manufacturers to implement ERP in a systematic manner.
3.9 Process-Based Organizational Change: From China Towards A Global Model -
Maris G. Martinsons & Paul S. Hempel

Academy of Management Proceedings 2001 ODC

A leading global bank sought to apply the principles of business process re-engineering to all its international operations in order to take advantage of the latest information technologies. Responsibility for the re-engineering effort in Hong Kong was delegated to the regional manager. He was sceptical about the need for drastic change while the hierarchical nature of his department made it difficult for him to consult or involve his employees in the effort. In the end, he and his deputy redesigned their business operations by making moderate changes to most of the major processes and consolidating a few of them.

The redesign was implemented on a rather loose schedule over 15 months. This contrasted with an implementation timetable of only six months for more radical restructuring of the bank’s operations in the United States.

Little or no employee resistance was evident as the new business process model was being implemented in Hong Kong, and staff members there suggested only a couple of minor changes to the way that management had redesigned their work. In contrast, almost every employee in the U.S. wanted something modified, and several major changes ended up being made. The radically re-engineered operations in the U.S. ended up dramatically improving the bank’s competitiveness. Meanwhile, the Hong Kong employees had substantial and yet unexpected difficulties in handling many of the newly-assigned, multi-dimensional tasks. While gradual implementation of the modest redesign improved some performance measures, the top executives of the bank were generally disappointed with the results of the re-engineering effort in Hong Kong.
3.10 Total Quality Management And Business Process Re-Engineering: A Study Of Incremental And Radical Approaches To Change Management At BTNI - Frances M. Hill & Lee K. Collins

Total Quality Management, Vol. 10, No. 1, 1999, 37± 45

The paper reports a case study (an element of a wider project) undertaken at a Northern Ireland subsidiary of a UK telecommunications company, which is one of the few organizations in Ulster to have implemented total quality management (TQM) and large-scale business process reengineering (BPR). The company’s latest re-engineering project is discussed in the context of certain theoretical issues. These include: the nature of BPR; the circumstances in which the implementation of BPR is most likely to be effective in particular, whether or not a crisis is a necessary trigger; the most effective mode of implementation; the role of information technology and what, if anything, BPR is likely to achieve. Of major interest is the interaction between TQM and BPR, and how the company has made effective complementary use of these two approaches to change management in the pursuit of business excellence. In part, this has proved possible because both are underpinned by a long-term vision and change strategy, comprising many integrated elements.

3.11 Simulation Of Business Re-Engineering Processes: Case Study Of A United States Motor Manufacturing Company - Karina Ha User & David Paper

International Journal of Management Vol. 24 No. 4 December 2007

The purpose of the paper is twofold. First, it is believed that the current definition of business process reengineering is too restrictive and offer an alternative definition. An actual
case study at the Toyota plant in Kentucky in the United States is used as an instance to
demonstrate the viability of such a definition. Second, the authors introduce a methodology
rarely used for process reengineering, namely simulation, to identify potential cost savings
from process manipulations. They simulate the incoming volume of material, percentage of
parts that need to be cross-docked and the overall layout of the cross-docking area to show
their effects on the workload of the team members. Cross-docking in this study is the process
of sorting the incoming material and transporting it directly to the point of use on the
assembly line. They found that simulation offers managers a cost effective means to explore
process reengineering alternatives without actually modifying manufacturing plant layouts.

3.12 The Role of Information Systems Resources in ERP Capability Building and
Business Process Outcomes - Jahangir Karimi, Toni M. Somers, and Anol
Bhattacherjee


Many enterprise resource planning (ERP) implementation projects fail despite huge
investments. To explain such failures, the authors draw on the resource-based view (RBV) of
the firm to define various dimensions of information systems (IS) resources. Using resource-
picking and capability-building arguments, they examine the relationships between IS
resources and ERP capabilities to find out whether they have complementary effects on
outcomes. Empirical results from a survey of manufacturing firms that recently implemented
ERP systems support the hypothesized model. For IS research, this study further develops
the complementary and capability-building roles of IS resources, integrates RBV into
current knowledge of ERP implementation, and provides theoretical explanations for when
or under what conditions building ERP capabilities has the highest impact on business
process outcomes. For IS practice, it emphasizes the importance of IS resources in building ERP capabilities, provides preliminary measures for IS resource dimensions, and demonstrates their impact on firms’ ERP capabilities and consequent business process outcomes.


This research focuses on seeking the most important Critical Success Factors (CSF) that influence the implementation process of an Enterprise Resource Planning System (ERP) system. Based on a literature review, a reference list of 14 CSFs considered important in previous studies is identified. An experience survey, using a questionnaire, was conducted to verify whether these CSFs are also important and relevant for Mexican enterprises in the city of Guadalajara, Mexico. The sample consisted of 48 medium and large enterprises. The main results are as follows: (a) all the 14 CSFs in the reference list proved to be relevant for the Mexican enterprises; (b) no additional CSFs were added to the reference list by the participants, which implies that these 14 CSFs are the most important for the Mexican enterprises; and (c) cultural aspects is a likely cause of the differences in the ordering of CSF priority levels in different world regions.

3.14 Success Of ERP Implementation In Thai Industrial Firms: An Empirical Research of Its Antecedents and Consequences - Nichakorn Ditkaew & Phapruke Ussahawanitchakit,

Journal of Academy of Business and Economics, Volume 10, Number 1, 2010

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The purpose of this study is to investigate consequences of the success of enterprise resource planning (ERP) implementation on how affect internal control efficiency and decision making reliability when organizations employ information quality provided by ERP system for their functions. Then, internal control efficiency and decision making reliability are tested how they affect firm performance. Antecedents of success of ERP implementation including information system resources, information system capabilities, executive support, and business strategy will be examined whether the affect success of ERP implementation. Data from 2,692 Thai industrial firms in Industrial Estate Authority of Thailand (I-EAT) were collected. The result of OLS regression reveal that accounting information system quality is positively related to decision making reliability, capacity management improvement has a positive effect on both internal control efficiency and decision making reliability. Also, value operation effectiveness has a positive impact on both internal control and decision making reliability. In addition, internal control efficiency and decision making reliability have a positive influence on firm performance. Moreover, the relationships between antecedents and success of ERP implementation are significant and positive. However, moderating competitive environment does not influence relationship between consequences of ERP implementation and firm performance but moderating technology turbulence does negatively influence information system (IS) resources and business strategy – success of ERP implementation relationship. Conclusion, contributions, and suggestions for future research are presented.

3.15 Senior management perspectives and ISO 9000 effectiveness: an empirical research - C. L. Yeung, T. S. Lee and L. Y. Chan

While ISO 9000 certification is increasingly becoming "passport for business" in the marketplace, its effectiveness in enhancing an organization's performance is highly controversial. In recent years, some researchers have argued that the effectiveness of ISO 9000 is highly dependent on management’s attitudes to and understanding of the standard. Specifically, the authors conducted empirical research in the electronics industry to study how the 'objectives of gaining ISO certification the attitudes to implementation' and 'confidence of understanding the standard' among senior management affect the development of a quality management system (QMS) and subsequently organizational performance. They found that although senior management's confidence in their understanding of the standard and quality management is the most influential factor for the development of their QMS and to the induction of changes in systems, it does not improve organizational performance. On the other hand, organizations that believe the ISO 9000 should be adopted for operational objectives and serve as a system foundation for operations to achieve the best organizational performance. The research stipulates that ineffectiveness of the ISO 9000 is largely due to incorrect management objectives and expectations from the standard.

3.16 Maximizing the Benefits Of ISO 9000 Implementation - Alex Douglas, David Kirk, Carol Brennan & Arthur Ingram


The Labour Government, elected to office in May 1997, was striving for improvement and innovation in UK local government services in order to meet its tight budgetary targets. They aimed to achieve this through a policy of 'Best Value'. The long-term aim of this policy was the provision of high-quality services at the lowest possible cost. Local authorities had to ensure that they were utilizing the most effective and efficient means
of service delivery at their disposal in order to achieve the best possible value for their customers/citizens. A key principle of ‘Best Value’ is continuous improvement. Local authority service providers needed to demonstrate continuous improvement and therefore had been encouraged to pursue various best practice quality initiatives, the foremost of which is BS EN ISO 9000 (BSI, 1994). As proof of continuous improvement each local authority carried out a self-assessment of their performance. This requirement had led to the adoption of the EFQM Business Excellence Model as a self-assessment tool by many of Scotland’s 32 local councils. Ten councils had adopted the EFQM model across all services, with a further two councils adapting the model to their specific needs. A further five councils were considering adoption of the model and were currently conducting pilot studies in one or more services to gauge its suitability as a self-assessment tool (Brennan & Douglas, 1999). For those that do not adopt this method the only logical alternatives would seem to be the Balanced Scorecard (Kaplan & Norton, 1992), the SERVQUAL questionnaire (Parasuraman et al., 1985, 1988), or the SERVPERF questionnaire (Cronin & Taylor, 1992), although the latter two do not offer the scope of either the EFQM model or the Balanced Scorecard


Unpublished Paper

This paper develops and tests several hypotheses relating to ISO 9000 quality system certification process using data collected in a cross-sectional study undertaken in Australia. Multivariate analysis is used to analyse the quantitative data and test the hypotheses. Our findings show that there is a significant and positive relationship between the manager's
motives for adopting ISO 9000 certification and business performance. Those organisations that pursue certification willingly and positively across a broad spread of objectives are more likely to report improved organisational performance. The individual element found to contribute most to business performance was Customer Focus. The principal motivation to pursue ISO 9000 certification was found to come from customer pressure. Auditing style was found to have an insignificant (positive or negative) effect on business performance. The ability of the new ISO 9001-2000 standard to capture and meet the conformance and performance requirements of the organisation as part of a continuous improvement strategy will be a prime determinant of the extent to which managers embrace or reject ISO 9000 certification in the twenty first century.

3.18 A Systematic Approach to Optimizing Business Processes beyond ISO 9000: A Taiwanese Case Study - In-San Hwang & Chung-Li Chou
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establishing complete quality and continuous process improvement systems: (2) achieving economic and effective management by assessing and selecting the competitive processes as well as optimizing their quality and capabilities to enhance organizational competitiveness

3.19 The Effectiveness of Internal Quality Audits on ISO 9000 Quality Management Systems in the Construction Sector - Choon Kwee Goh, Grace Siew Tuan Chng, Abas Binte Nashila and Donal Lenihan

Unpublished paper

This paper examines the effectiveness, within the construction sector, of the Internal Quality Audit (IQA) and its contribution to Quality Management System (QMS) based on the ISO 9000 Certification Scheme.

Once a company has obtained ISO Certification the IQA is amongst the requirements specified in the ISO Standards that must be maintained. However, the way the IQA is conducted has an effect on its contribution to the QMS. This specifically includes company risk management and compliance with contractual obligations. A literature review establishes the relationship between the QMS, ISO implementation and the auditing system. The four indicators of an effective IQA are identified. These indicators are then used as a basis to measure effectiveness of IQAs when applied to construction. This paper draws on the findings of recently conducted case studies conducted on the use of IQAs in the construction industry in Singapore. The key finding is that IQAs are under utilized in terms of a measure of the effectiveness of the QMS and also as a measure of demonstrating compliance with contractual obligations. The recommendations arising from this research fall into two categories. The first category relates to the need to increase the frequency of conducting IQAs in order that there is adequate evidence of implementation of the QMS for
the purpose of risk minimization, third party audits and compliance with contractual obligations. The second area is the need to train and educate staff to understand the role and contribution of the IQA to the overall QMS process.


Unpublished paper

A comprehensively and properly implemented quality system is the best means for a company to ensure that its products and services will consistently meet customer's requirements. The ISO 9000 series of quality standards is the most widely accepted for such a quality system. ISO 9000 has been adopted as a national standard by most industrial nations of the world. The main purpose of this paper is to describe a Ganging Absence of prerequisites (GAP) analysis Expert System for ISO 9000 implementation by using an Expert System Shell called CRYSTAL 4. This Expert System consists of four sections. The introduction section is meant for new users who desire to implement ISO 9000 in their organisation. The recommendation section advises the type of ISO 9000 to register with, in addition to selecting a registrar and registration. The GAP between the prerequisites and what actually exists in the present environment so that successful implementation can be achieved. The system also provides the user solutions with a wide variety of common quality problems through a trouble-shooting section. The Expert System has been validated using two different scenarios.

3.21 ISO 9000 certification in Indian industries: A Survey - U. H. Acharya & Sanjit Ray
Indian industries have gone for ISO certification in a big way since the beginning of 1990. This independent survey was undertaken to assimilate the experiences of the companies gathered in the path of certification, its impact on their business, opinion about the auditing processes and hurdles faced in the path of certification. This survey is the largest and most wide-ranging of its kind to be conducted in this country. It covers well over 1200 ISO 9000-certified organizations of all sizes and industry sectors and registered by different certification bodies. Analysis of the survey data revealed that ISO 9000 implementation has benefited in: better understanding of process/ activities being performed; better understanding of responsibilities/authorities; and linkage across the organization. In this article, we discuss the findings of the survey and also suggest a few counter measures for improving the effectiveness.

3.22 An Empirical Examination Of ISO 9000- Registered Companies In New Zealand- Kie Sun Lee & Elaine Palmer

This paper presents the results of a mail survey carried out on ISO 9000-accredited manufacturing companies in New Zealand. 63.6% of the 121 responding organizations were small (fewer than 100 employees), while the remaining 36.4% were large (more than 100 employees). The research finds significant differences in the quality programme implementation patterns corresponding to these differences in employee numbers. The key findings are that the smaller companies, when compared to the larger companies, are more
likely to implement ISO 9000 because of external factors rather than internal factors, show
less understanding of the relationship between ISO 9000 and total quality management,
which results in them implementing ISO 9000 only, and have little intention of extending
their quality programmes further (unless required to do so). Based on these findings, the
paper develops frameworks which show the 'common path' of quality implementation for
smaller versus larger manufacturing companies in New Zealand. The differences observed
between the smaller and larger firms are discussed, and the paper concludes by developing
some suggestions for future research.

3.23 Implementing the ISO 9000 Standards in Turkey: A Study of Large Companies’
Satisfaction with ISO 9000 - Fethi Calisir, Cahit A. Bayraktar & Berna Beskese
Total Quality Management, Vol. 12, No. 4, 2001, 429-438

Using data collected from a sample of 73 ISO-certified large Turkish companies, the
authors explore the influence of various factors on large companies’ satisfaction with ISO
9000. This is the first attempt to examine the relationships between companies’ demographic
characteristics, difficulties encountered in ISO 9000 implementation, improvements
generated after attaining ISO 9000 and large companies’ satisfaction with ISO 9000.
Regression analysis is used to analyse the relationships between these variables. The results
suggest that large companies may be more satisfied with ISO 9000 through increased
emphasis on making operational improvements. In particular, they should focus on
increasing product/service quality, reducing error/defect rate in production/service and
achieving standardization. The paper concludes with a discussion of findings resulting in
developing a model predicting companies’ satisfaction with ISO 9000 and recommendations
for future research areas.
3.24 Experiences of US and Foreign-Owned Firms: A New Perspective on ISO 9000 Implementation - M. Ebrahlmpourt, B. E. Witherst and N. Hikmetj


Responses from over 500 companies relating to their experiences with ISO 9000 implementation are presented. Companies were categorized according to ownership: US-owned (Type U) and foreign-owned (Type F) manufacturing firms. The results reveal the importance and the dual role of documentation as a critical factor necessary to obtain ISO 9000 registration: (1) as the critical element requiring the highest level of effort in the registration process; and (2) as one of the key potential barriers to successful implementation. Increasing market share is the highest rated reason for achieving ISO 9000 registration. ISO 9000 registered companies expect a high degree of improvement in product design, process design, product quality, communication, and supplier relations. The findings also reveal that there is no significant difference between the two firm ownership types for all variables tested, indicating that the ISO 9000 standards appear universal in applicability.


This paper examines whether or not small businesses (fewer than 100 employees) can successfully pursue total quality management (TQM) beyond ISO 9000. A review of the literature on quality in small businesses shows that the benefits of ISO 9000 can far outweigh the costs of achieving registrations (even for small businesses) but also emphasizes that ISO 9000 should be viewed as a step towards TQM and not the end of the quality
journey. Although many small businesses are benefiting from ISO 9000, an increasing number of small ISO businesses are not progressing towards TQM. To explore the actual impact of quality on small business, a number of small ISO 9000 businesses were surveyed. The main conclusions and recommendations arising from the thesis are that small businesses can benefit from implementing TQM. However, small TQM practitioners need to learn to be more externally focused, i.e. customer focused, to measure the financial impact of TQM on bottom line performance and to use direct methods to measure customer satisfaction.

3.26 Relationship Between Total Productive Maintenance And Performance - S. A. Brahyy and W.K. Chongy


Increased global competition has augmented the importance of total productive maintenance (TPM) in obtaining and maintaining a competitive advantage. More and more organizations are seeking proactive tools such as TPM to enhance their competitive position. The paper focuses on gaining insights into the impact of TPM on the performance of the organization. There is support for a positive correlation between TPM and business performance. There is also a positive correlation between TPM and business performance shown by all the six general constructs of corporate planning, top management leadership, human resource focus, process focus, total quality management focus and information system focus, and the three specific constructs of TPM strategies, TPM teams and TPM process focus. Clearly, this indicates the need for TPM to be an integrated effort for the entire organization. In addition, experienced and large TPM firms fare better in terms of business performance while there are no differences in the performance of manufacturing and services.
fully, TPM dramatically improves productivity and quality, and reduces costs (Nakajima, 1988). TPM is productive maintenance carried out by all employees through well-planned small-group activities. For example, "In TPM the machine operator is responsible for the maintenance of the machine, as well as its operation. The implementation of TPM can generate considerable cost savings through increased productivity of the machinery. The greater the degree of factory automation, the greater the cost reduction generated by TPM (Nakajima, 1988). One of the main aims of TPM is to increase the productivity of plant and equipment in such a way as to achieve maximum productivity with only a modest investment in maintenance. This is done by improving and maintaining equipment and facilities at an optimal performance level in order to reduce their life-cycle costs. Cost-effectiveness can be a direct result of an organization's ability to eliminate the causes of the reduction in equipment effectiveness.

3.28 Implementation of Total Productive Maintenance In Support Of An Established Total Quality Programme - Rodney McAdam & Anne-Marie Duffner

Total Quality Management, Vol. 7, No. 6, 1996, 613-630

Total productive maintenance (TPM) is increasingly being seen as a suitable initiative/technique for effectively involving the workforce in manufacturing based organizations to produce increased productivity and add new impetus to total quality (TQ) efforts. This paper discusses in detail how TPM can be effectively implemented within an organization that has an established TQ programme in place. The relationship between total quality management and TPM is investigated with regard to improving the synergy between the initiatives and the effectiveness of each respectively. The benefits of applying TPM are shown and an implementation strategy is described. Case study data on Harris Ireland Ltd
(part of the Harris Corporation) are analyzed and discussed in detail. The data include questionnaire and interview data. Comparison is also made with TPM implementation in NEC Semiconductor Ireland Ltd and Short Bros pic (part of the Bombardier Aerospace Group). The paper also shows how TPM implementation in Harris has been driven by the results of Baldrige-based audits.

3.29 Matching the Promotion of Total Quality Control and Total Productive Maintenance: An Emerging Pattern For The Nurturing Of Well-Balanced Manufacturers - Dario Ikuo Miyake & Takao Enkawa


This paper is organized in three parts. First, the authors discuss the merits of adopting a more eclectic approach that integrates the exploitation of the strengths exhibited by selected, key management paradigms, in the strive to nurturing well-balanced manufacturing firms capable of surviving and prospering in markets where competitiveness is ever increasing. Concepts providing theoretical grounds to such an approach are reviewed. Second, they develop a comparative analysis of the total quality control (TQC) and total productive maintenance (TPM) paradigms which shows that they can be complementary to each other. Grounded on insights acquired from a comparative investigation of archetypal practitioners of TQC and TPM, in particular, the concurrent promotion of enantiomorphic sides and approaches featured by these paradigms is shown not to be antagonistic but rather mandatory nowadays. On that account, they highlight the promising potential of exploiting the strengths that are intrinsic to these two subject paradigms for fostering the new competencies that firms must be equipped with. Finally, the authors advocate that such a manufacturing strategy can be deployed by the cumulative, stepwise and consistent
embedding of performance improvement mechanisms derived from each of the subject paradigms under the framework of unfolding 'strategic staircases'.

3.30 Evaluating the Efficiency of Implementing Total Productive Maintenance - Fu-Kwun Wang


Total Productive Maintenance (TPM) has been widely recognized as a strategic weapon for improving manufacturing performance. This has also been successfully implemented in many organizations. The evaluation of TPM efficiency can assist factories in improving their operations across a variety of dimensions. In particular, it aids factories in monitoring their performance in comparison with other factories. Effective benchmarks of high performance and efficient cluster are identified for improving the factories in the other groups. Here, Data Envelopment Analysis (DEA) is used to evaluate the efficiency score for when the utility function considers its many attributes. A prediction model by the multiple regression method is obtained. This regression equation can be used to obtain the expected efficiency score for checking the performance of implementing TPM. Finally, the proposed methodology can identify a peer group of efficient factories against which to benchmark. The actual improvement process may involve identifying the operating practices and procedures of the benchmark factories and engaging in re-engineering programs.

3.31 Implementing Total Productive Maintenance In Multi-Union Manufacturing Organizations: Overcoming Job Demarcation - Rodney McAdam & Fergal McGeough

Total productive maintenance (TPM) is a change management approach that has been shown to have considerable impact on the internal efficiency of manufacturing organizations, both in the west and in Japan. One of the central tenets of TPM is autonomous maintenance, hence there is an implied loss of job demarcation. Although there are many TPM studies in the literature, there are few which concentrate on implementing TPM in heavily demarcated and unionized organizations. This paper describes the results of a study to investigate TPM applications in multi-unionized and heavily demarcated manufacturing organizations. Implementation and key success factors are discussed. Comparisons are also made with best-practice applications in Japan.

3.32 Manufacturing Cost Deployment - H. Yamashinaf


One of the major problems in manufacturing is to reduce cost. To do so various activities such as Total Productive Maintenance (TPM), Total Quality Management (TQM), Industrial Engineering (IE) and Just-in-Time (JIT) are often carried out. However, many companies recognize that these activities do not necessarily guarantee cost reduction even if they have been implemented successfully. In the worst case, manufacturing cost rises with the introduction of such activities. This is an important issue in manufacturing, but strangely in the academic literature there have been no studies that have been addressed directly to the methodology of manufacturing cost reduction. The aim was to develop a good method that establishes a cost-reduction programme scientifically and systematically. This method, termed 'manufacturing cost deployment', is a very powerful tool to identify production losses to reduce costs. A simple algorithm to establish a cost-reduction programme is presented and one case study is given.
3.33 A Critical Study of TQM and TPM Approaches on Business Performance of Indian Manufacturing Industry - Dinesh Seth & Deepak Tripathi


Total Quality Management (TQM) and Total Productive Maintenance (TPM) have gained considerable acceptance in Indian manufacturing industry to take on the challenge of transition from protected economy to global competition. These two improvement drives are being adopted and adapted for raising performance standards of Indian companies to world class level. TQM and TPM are considered complementary to each other and thereby being implemented simultaneously by many companies to achieve synergy. This paper aims to provide empirical evidences on the comparative contributions of two drives to improve business performance in the context of Indian manufacturing industry. It also tries to establish a synergetic effect of TQM and TPM, when implemented in tandem. The paper highlights that a combined application brings out significantly higher improvements than individual drives. The study is based on data collected through a questionnaire as a research instrument and statistical analysis using Microsoft EXCEL 2000.

3.34 Team development when implementing TPM – Liselott Lycke


Over the last few decades, total quality management has gained recognition in many organizations. Guidance in implementing TQM and avoiding pitfalls is available in several papers. Consequently, over the years, many different tools and methodologies have been developed to support TQM implementation. Those would—if adapted correctly—help organizations improve their productivity and thereby their profit. Many, if not all, of the tools and methodologies should be practised when working in teams. Therefore, it is very
important that we know how working groups become effective teams. This paper discusses team building and team development from a social science perspective and the paper also presents a case study from a Swedish medium-sized company. When implementing TPM (Total Productive Maintenance) the company had to form working groups into improvement teams. The author was involved in forming the teams and observed the building and development of the teams for two years. The paper ends with a conclusion.

3.35 Fads, Techniques And Control: The Competing Agendas of TPM and TECEX at the Royal Mail (UK) - Mike Noon, Sarah Jenkins, & Miguel Martinez Lucio

Journal on Management Studies 37 A June 2000

The paper offers empirical insight into how traditional thinking can continue to dominate contemporary change initiatives, and suggests that the propensity to repackage and sell 'old' management theory as new techniques reflects the persistence of fundamental, insoluble dilemmas in the nature of organizing. Empirical evidence is drawn from a detailed qualitative study of two case study sites at the Royal Mail, the UK postal service. The analysis shows how the two different change initiatives of Total Productive Maintenance (TPM) and Technical Centres of Excellence (TECEX) are in competition through their methods and discourse, and how this reflects underlying and competing differences in ideologies of management. It vividly demonstrates how contemporary management thinking can involve repackaging old ideas in new rhetoric and a tendency for faddism. In organizations such as Royal Mail the consequence is that far from proving to be the solution to organizational problems, the techniques perpetuate a traditional management dualism in strategies of labour management between control and autonomy.
3.36  Total Productive Maintenance (TPM) - Concepts and Literature Review

Thomas R. Pomorski

Published privately

“The ultimate goal of TPM is to implement ‘perfect manufacturing’. (Shirose 1992 p. 1) Originally introduced as a set of practices and methodologies focused on manufacturing equipment performance improvement, TPM has matured into a comprehensive equipment-centric effort to optimize manufacturing productivity.1 “Total Productive Maintenance is based on teamwork and provides a method for the achievement of world class levels of overall equipment effectiveness through people and not through technology or systems alone.” [Wilmott, 1994 #783 p. 1] This paper examines the basic concepts of TPM and reviews the significant literature related to design, implementation, and maintenance of TPM programs in manufacturing operations. Investigation includes the organizational structures, human interactions, analytical tools, and success criteria associated with the implementation of Total Productive Manufacturing programs.


Total Quality Management Vol. 17, No. 9, 1213–1229, November 2006

This paper provides an analysis of the essential characteristics of the TQM philosophy by comparing the work of ten notable authors in the field. A framework is produced which clusters the identified TQM enablers under the well-known operations management dimensions of technology, organisation and people. These enablers are linked with business performance via balance scorecard type financial and non-financial measures. In order to capture a snapshot of European Company’s efforts to implement the TQM, a
questionnaire survey is designed and implemented. Results of the survey are presented showing the main differentiating factors between the sample companies, and a way of assessing the difference between the theoretical underpinning and the practitioners’ undertakings. Survey results indicate that organisations are experiencing much difficulty in translating total quality management theory into practice. Only a few organisations have successfully adopted a holistic approach to total quality management philosophy, and most of these put relatively high emphasis on technology elements compared with soft issues of TQM. However, where companies can realise the financial outputs, non-financial benefits such as workflow management, skills development and team learning are not realised. In addition, overall, non-financial measures have secured low weightings compared with the financial measures. We believe that the framework presented in this paper can help an organisation to concentrate its TQM implementation efforts in terms of technology, organisational and people management dimensions.

3.38 Exploring the Correspondence between Total Quality Management and Peter Senge’s Disciplines of a Learning Organization: A Taiwan Perspective - Dong-Shang Chang & Kuo-Lung Sun


The most important part of Total Quality Management (TQM) is pursuing continuous improvement in all aspects of organization, whereas a Learning Organization (LO) denotes learning principles that eventually lead to organization learning and growth. Because these principles seek similar goals, to investigate the association of these philosophies is of great value to management. The primary purpose of this paper is to explore the correspondence between TQM and LO. A group of evaluators consisting of academic scholars, business
consultants as well as industry practitioners, judged the relative strength of the relationship between TQM constructs and Senge’s five disciplines of learning organization. By applying correspondence analysis and cluster analysis, the result exhibits that close correspondence emerges between TQM and LO. Moreover, TQM constructs and LO disciplines are located on a two-dimensional coordination of a management map, in which dimensions of the measurability and the diffusibility are inferred and managerial implications from these dimensions are articulated. Finally, this study subsequently identifies three distinctive association groups composed of TQM constructs and LO disciplines. These groups are further defined as individual dominant, higher authority and product/material oriented.

3.39  Why Quality, Cost and Business Excellence are Inseparable - Vladimir Kajdan

Total Quality Management, Vol. 18, Nos. 1–2, 147–152, January–March 2007

Cost reduction is the most attractive part of the Total Quality Management (TQM) approach (Sinha, 2001). The true optimum of a process may be considered as the point where the cost of the product becomes minimal. Combining the value stream performance indicators with quality indicators will allow us to optimize the process for every step within the entire operations chain on the basis of cost minimization.

3.40  A Cross-Cultural Comparison Of Top Management Personality For TQM Implementation - Hsiu Ju Yen, Dennis W. Krumwiede & Chwen Sheu


Top management is the most important single entity in the implementation of cultural and philosophical changes within an organization. This study investigated the objects of top management personality on the implementation of Total Quality Management (TQM) across
two very diverse cultures, Taiwan and the USA. The authors used the Myers-Briggs Type Indicator (MBTI) to classify top management personality types. Surveys were then performed to study the relationship between top management personality and TQM practices in these two countries. Several factors (commitment to training, time of implementation and management philosophical approach) believed to be critical to TQM implementation were also tested. The results indicated that top managers in both countries with specific personality types are associated with organizational environments that exhibit characteristics conducive to TQM.


Over the last decade, Australian researchers have published widely on various issues of quality management in the context of Australian businesses. Only a few recent studies have measured reliability and validity in the development of quality management constructs and scales through rigorous statistical techniques. In this paper, the quality management literature was surveyed for scale development efforts and four studies were identified. These studies were reviewed to identify the statistical techniques and methods being utilized to develop scales of measurement. Similarities and differences of techniques of scale development were pointed out and suggestions are made for those who conduct future research and who evaluate it for possible publication. Although the number of published studies is small, they provide a baseline to which scale development efforts are measured in the future.
3.42 An Organizational Profitability, Productivity, Performance (PPP) Model: Going Beyond TQM and BPR - R. Selladurai


This paper analyses the two popular and widespread organizational development models, total quality management (TQM) and business process re-engineering (BPR). It proposes an organizational profitability, productivity, performance (PPP) model that integrates and enhances the two approaches with a synergistic perspective. Emphasis is placed on major elements such as quality, people, customers, adaptability, business processes and leadership that organizations may use to improve profitability, productivity, and performance.

3.43 Beyond TQM Implementation: The New Paradigm of TQM Sustainability - Mohamed Zairi

Total Quality Management, Vol. 13, No. 8, 2002, 1161-1172

The concept of sustainable development has been touted as a new planning agenda (Beatley & Manning, 1998). As such, it becomes a fundamental concept that should be an important aspect of all further policy developments (Loffler, 1998). Sustainable development is based on a perceived need to address environmental deterioration and to maintain the vital functions of natural systems for the well being of present and future generations. Sustainability is defined as ‘the ability of an organization to adapt to change in the business environment to capture contemporary best practice methods and to achieve and maintain superior competitive performance’ (Zairi & Liburd 2001). This concepts implies that sustainability is a mean for an organization to maintain its competitiveness. Quinn (2000) has a similar idea on sustainability. He describe it as the development that meets present
needs without compromising the ability of future generations to meet their own needs. Gladwin et al. (1995), on the other hand, define it as 'development', which meets the needs of the present, without compromising the ability of future organizations to meet their own needs. Total Quality Management (TQM) represents an integrative approach for the pursuit of customer satisfaction (Chin et al. 2001). However, facing intense pressure of global competitions, organizations need to consider incorporating the idea of sustainability in TQM in order to sustain their competitive advantage and performance improvement. In addition, the interest of organizational survival, growth and prosperity has therefore got to be concerned with not just the present but also the future. The concept of sustainability does however remain unclear and it is therefore worth exploring further how it can be applied. It is purpose of this paper to highlight same of the key issues of sustainable TQM, to trace transformational evolutions that bring different orientations over time. The paper will then describe how various critical factors can create a sustainable competitive advantage, when working in harmony. Finally, a wide range of best practices will be illustrated to support model for TQM sustainability.

3.44 Influence of the Environment on Innovation Performance of TQM - Hsin-Min Hung


How can a firm use TQM practices for both quality performance and innovation performance? Why does the business environment have to be suitable when TQM practices are implemented, before innovation performance can be shown? This paper proposes a framework and illustrates a case study to argue that (1) TQM practice has a primary effect, in which TQM practices obtain quality performance, and a secondary effect, which leverages
features extracted from TQM practices for innovation performance; (2) the secondary effect of TQM practices must have business environment changes to match claims for valuable features before innovation performance can be seen. The case study depicts how a leading global firm innovated by taking a chance on resolving a critical quality issue in TQM practices through innovation. The innovation initially had no effect on sales when the business environment was unchanged despite marketing/sales efforts, but the innovation was a critical success after business environment changes created value for the innovation’s claims. Realizing how TQM practices lead to quality and innovation performance and how the business environment is important for the dynamic process above, reminds executives to make features of innovation from TQM practices as open and scalable as possible to match emerging social demands, or to consider trends of the business environment when developing solutions in TQM practices.

3.45 Implementation obstacles for a work development-oriented TQM strategy -
Martin Ljungstroë & Bengt Klefsjoë

Interest in Total Quality Management has been strong over the past decade. In the western world, quality oriented strategies have become one of the leading methods to develop industrial companies. This article focuses on the connections between TQM and work development. The main reason for this focus is that the need to satisfy customers with higher requirements needs employees that increasingly value their working conditions, and so work development is needed. It is therefore interesting to study companies trying to satisfy their internal and external customers, TQM and how they deal with work development. Studies to analyse obstacles to success, with a strategy that combines work-
development and TQM studies, were performed in Swedish and American companies. The studies show that even if the companies commit themselves to TQM and the same core values, the differences are obvious concerning work organisation, work development and the practical TQM approach. The main obstacles to a work-development-oriented TQM strategy are limited resources, lack of knowledge and the management’s perspective concerning work development. Here, the metalworker union traditionally plays a significant role, but in TQM, where focus on competence and decisive authority is urgent, its role is not as obvious as it could be.

3.46 Pitfalls In Total Quality Management Implementation: The Case of a Hong Kong Company - Haresh Gurnani


The planning phase of a quality management programme is as important as the implementation of the programme because total quality management (TQM) requires the integration of the philosophies, practices, tools, methods and techniques into a coherent plan. This process is further complicated due to the differing management style between the expatriate and local managers in many multinational firms, high employee turnover, and other factors endemic to the Asia Pacific region. In this paper, the authors study the process of TQM implementation in the Hong Kong division of a multinational company. Using data collected from interviews and through a questionnaire, they analyse the problems faced in TQM implementation and provide management with corrective recommendations. The contribution of this paper is to discuss the pitfalls in the implementation and to recommend strategies for promoting TQM. Even though the analysis is based on a case study approach,
since many of these problems are common to this region, the significance of the findings has more widespread implications.

3.47 Six-Sigma and the Revival of TQM - Forrest B. Green


This paper suggests that Total Quality Management (TQM) is undergoing a revival under a new name, six-sigma. Many organizations have discovered that such methodologies under appropriate leadership can be applied in such a way as to restore the strength of quality initiatives. Six-sigma provides a highly disciplined approach to quality improvement, assures follow-through using a five step process, and clearly assigns personnel responsibility. Specific customer oriented metrics are identified and tracked until a control system is in place to maintain the improved processes. All required features of TQM are found in the correct application of six-sigma.

3.48 Sustaining TQM: A Synthesis of Literature And Proposed Research Framework - Mohd Ashari Idris & Mohamed Zairi

Total Quality Management, Vol. 17, No. 9, 1245–1260, November 2006

As the new millennium progresses, TQM is expected to mature into a sustainability phase to support a universal business strategy. Its critical success factors will vary in order to accommodate changes in the environment where the firms operate. Despite the fact that TQM initiatives have been recognised by many organisations as capable of transforming the quality culture and producing competitiveness, new initiatives or their improved versions are being suggested to retain TQM vigour and its sustainability. This has called for a continuous discourse and the development of a framework for sustaining TQM, which is the object of this paper. The paper first traces the development of the concept of sustainability, leading to
the conception of sustainable TQM. A framework of proposed research is presented drawing from the literature on quality orientation, performance measurement, change management, and related organisational theories. Strategies for effectively sustaining TQM implementation are highlighted. A set of theoretical enablers and inhibitors for sustaining TQM are discussed, and a research model is proposed. From the model, various scenarios are constructed, and research propositions are deduced. Finally, a methodology for an empirical stage of research is offered.


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Despite two decades of research, the relationship between TQM and financial performance is still controversial. In fact, both proponents and detractors can marshal an array of studies that provide support for their respective positions. Methodological limitations and differences between studies are often cited as the predominant reason for the varied results. In light of methodological problems found in the TQM–Financial Performance literature, a research standard is proposed – a nine-item research gauntlet that researchers must traverse sequentially, if they are to make a more definitive assessment of the relationship between TQM and subsequent financial performance.


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Total Quality Management (TQM) is arguably one of the most pervasive management strategies of the last several decades. Given the ubiquitous nature of TQM,
many attempts have been made to ascertain the impact that this strategy has had on subsequent financial performance. Key studies in the TQM–Financial Performance research stream are reviewed, including the most recent, which have generally brought increased rigor with each new project. Since the particular research stream now includes hundreds of studies, only the most relevant and important are reviewed. This review will proceed in the following order: anecdotal research, practitioner sponsored, empirical research, individual TQM dimensions and financial performance, and the entire TQM construct and financial performance. A brief review of the major methodological limitations inherent in these studies and how future research can address them concludes this review.

3.51 A comparison of quality programmes: Total quality management and ISO 9000
- Zhiwei Zhu & Larry Scheuermann


This paper presents a review of the current literature on quality programs (QPs). The paper examines the reported cases of the two major QPs: total quality management (TQM) and the ISO 9000 series. The successes and failures of the QP implementations documented in the literature are discussed. Finally, the major differences between TQM and the ISO 9000 series are summarized.


This research on Total Quality Management (TQM) investigates the essences and processes of TQM implementation and its effects on organisation performance. In particular, it reports the results of a questionnaire survey of TQM practices in Chinese companies. The research identifies a series of concepts under TQM and the significant benefits it can bring to
organisations to help them continuously improve, not only in product or service quality but also in integrated company management. The results from the questionnaire indicate that the adoption of TQM in China is extensive, and the majority of the expected benefits in the literature have been delivered to these Chinese companies. In addition, the questionnaire also includes two comparisons of organisation performance: one is between companies with and without TQM; the other is among TQM companies. The findings provide evidence that TQM can positively impact firm performance depending on the degree of implementation.


Quality management systems help industries to achieve the highest standards in providing world class services to customers. They encourage continuous improvement. Organizations that have implemented the TQM concept focus on producing quality goods and services to customers and are able to provide independent evidence of good quality management practice. Assuring quality is a multifunctional effort covering many aspects of operations. In this paper, the authors have demonstrated a web-based methodology to measure the level of TQM implementation in Indian industries. This paper provides a synthesis of the quality literature by identifying ten critical success factors of quality management in manufacturing industries. Operational measures of these factors are developed using data collected through the internet from 104 Indian industries. The measures could be used by decision makers in an organization to assess the status of quality management in order to direct improvements in the quality area.